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MEMORANDUM

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From: Nick Zilka, IDEQ

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Subject: Hydrologic Evaluation of Kellogg Tunnel and S. Fk. Coeur d'Alene River

I have reviewed the subject report and, given the reputation of the firm, the scientific expertise of its staff, and its resouces, I am quite disappointed (especially after the Mine Pool report). A variety of data, some relevant and some not and some accurate and some not, has been subjected to several forms of data processing to arrive at conclusions. Given the nature of the data, one has to doubt the conclusions. Let me run through major examples of what I mean.

P.6, p.1: Data on snowpack is collected. While snowpack influences the total volume of water that will leave the watershed, at BHSS it does not necessarily control peak flows. 1998-1999 snowpack was very deep; but, importantly, most of it was above 4000 feet (great for those who drive 4th of July Pass). Hence, combined with favorable weather, it came off gradually. In flood years, it is snow at lower elevations combined with a rain-on-snow event that causes significant peak flows.

P.6, p.6: An equation is generated to derive flows for the South Fork at the Pinehurst station for years the station did not exist. While fine in theory, an examination of the "Peak Flow Statistics" table shows that the highest peak year was 1996 and the second highest was 1974, by a large margin. The truth is the exact opposite.

P.7, p.2: It is stated that "However, the nature of the flows from the Kellogg Tunnel is different from that of the SFCdA because of mine operations and dewatering efforts that are included in the historical data set." A key point. Additionally key is the point often made by mutual fund companies - past performance is no guarantee of future performance. What happens at the KT in the future will be largely determined by humans.

P.8, p.1: After some correlation analysis, it is concluded that "..increasing flows at SFCdA are associated with an increase at 9LA." Bob Hopper and others could have saved this work via a phone call.

P.8, p.2: The Kellogg Tunnel flow and SFCdA flow data used in this evaluation do not demonstrate a strong correlation." No surprise, for reasons beyond those listed in the paragraph.

P.9, p.1: At this point rigorous analysis is done to calculate return intervals based on the data

discussed above. Remember this is data that is flawed and/or cannot be correlated. Won't the results be of dubious quality?

P.11, p.1: The years 1973, 1981, 1982, 1987, and 1996 are chosen. Remember, 1973, 1981, and 1982 were derived with a formula. Also the "..plot of Kellogg Tunnel.." flows can't be correlated with these flows. Additionally, it is stated that these years represent ".. a **range** of flow conditions.." (emphasis added). None represents a low flow year, the very condition where CTP TMDL compliance becomes most problematic.

P.13, p.2: "Each option would limit access to these levels when the storage is used." Full operation of the mine would likely preclude this approach. Have we decided that the mine will operate similar as it is today? If not, we must consider that Bob will sell it to a mining company that will only buy the mine if ore reserves are the only major financial risk.

P.14, Table 6: In this report, Alternative 5 ends up being the likely scenario. It has a NPV of $61 million. What entity can afford this? Where are we headed?

P.14, p.3: "CTP discharge loads associated with various water years and CTP sizes can be calculated from the estimated effluent concentrations above. This is done by taking the daily flows developed for the different scenarios in the routing analysis.." Here we go again with data quality.

P.16, p.6: "Irrigation would likely contribute metals to the hillsides and CIA." "The evaluation does not consider background concentrations of metals already in the soil, and does not address the risk to human health and the environment associated with the increase in metal concentrations." For agencies intimately involved in a mine cleanup, metal levels is the issue. Either evaluate fully or don't go there.

P.20, p.2,3: Irrigation of the CIA sounds simple conceptually; but, given the remedial approach, irrigation would require moisture sensors (which the golf course would have had) and the system would require O&M. The whole scenario could be complicated by summer rains.

Enough points made. Bottomline, I have two major concerns that go beyond this report. First, reports such as this will become the foundation for decisions that determine the future of water treatment at the BHSS. The ramifications, especially in terms of dollars and remedy success, are huge. A slight error could be serious and a big error could be devastating. Everything we have done at the Site for each individual activity pales in comparison to this. Second, this report dealt with subject matter I know something about. Others will not. How will I be confident that the conclusions reached in those reports are valid?